

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Invertebrate Abstract

Element Code: IMGASC9150

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Sonorella christenseni*

COMMON NAME: Clark Peak Talussnail

SYNONYMS: *Sonorella* sp 1

FAMILY: Helminthoglyptidae

AUTHOR, PLACE OF PUBLICATION: Fairbanks, H.L. & R.L. Reeder. 1980. Two new species of *Sonorella* (Gastropoda: Pulmonata: Helminthoglyptidae) from the Pinaleno Mountains, Arizona. Proceedings of the Biological Society of Washington. 93(2): 395-404.

TYPE LOCALITY: Rockslide on north slope of Clark Peak, Pinaleno Mountains, Graham County, Arizona.

TYPE SPECIMEN: Holotype: USNM 783321. No name of collector or date of collection given.

Paratypes: USNM 783322, No name of collector or date of collection given.

6916 & 6916B, W.B. Miller, No date given.

4024B, C.C. Cristensen, No date given.

2548, H.L. Fairbanks, No date given.

TAXONOMIC UNIQUENESS:

DESCRIPTION: Description of holotype: shell depressed, heliciform, convex above and below, thin, glossy, tan in color, with one chestnut-brown spiral band just above midline of rounded shoulder of body whorl; umbilicate. Aperture oblique, oval, slightly wider than high, parietal callus thin. This species is characterized anatomically by a large epiphallic caecum, vagina shorter than the penis, and a long smooth pointed verge. Measurements of holotype: diameter 20.6 mm, height 11.0 mm; whorls 4 and 2/3. Embryonic shell of approximately 1.5 whorls, first .5 whorl including apex, with radial striae only, remainder of embryonic shell having a reticulate pattern of fine lines that break up into a granular pattern in the last .25 whorl.

For helminthoglyptidae the buccal mass is small and spheroidal. The gastric caecum and the rectal caecum are absent. The radular teeth are endocones and ectocones retained in marginal teeth but these are serrated, on quadrate or rectangular basal plates or the central and lateral

teeth may be lacking endocones and ectocones but with a broad mesocone. The prolonged cuspid head on radular teeth may or may not be present. The cephalic shield is reduced, defined only by vestigial grooves. The hyponotum is absent. Inferior tentacles are present. The eye position is at the tip of more or less elongate cephalic tentacle. The tentacular nerve is bifurcated. (Barker 2001).

AIDS TO IDENTIFICATION: Location and physical description. “Differentiated from *S. grahamensis* by shell characteristics. However, the two are still difficult to separate with casual examination. Comparisons of the genitalia of these two species will separate them easily.” (Fairbanks and Reeder, 1980). Inseparable from *S. imitator* on the basis of shell alone. Examination of the genitalia separates these two species. (Fairbanks and Reeder, 1980).

ILLUSTRATIONS: Photos of dorsal, ventral and side (Fairbanks and Reeder, 1980: P. 396, Fig. 1)
Line drawings of reproductive organs (Fairbanks and Reeder, 1980: P. 398, Fig. 2)
Photo of shell (Hoffman, undated: P. 19, Fig. 8)
Line drawing of reproductive tract (Hoffman, undated: P. 23, Fig. 11)

TOTAL RANGE: Rockslides on north slope of Clark Peak, Blue Jay Ridge area, and Ladybug Saddle, Pinaleno Mountains, Graham County, Arizona.

RANGE WITHIN ARIZONA: See “Total Range.”

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: It is believed that most Pinaleno land snails mature in 2 - 3 years with a lifespan of approximately six years. According to Hoffman (undated), humidity can be very important, giving them enough moisture to support foraging, although there may be no rainfall for several weeks.

REPRODUCTION: Reproduction in *Sonorella* of the Pinaleno Mountains has not been studied. Hoffman (undated) believes that they are probably similar to other *Sonorella* species, which are hermaphroditic. “Each *Sonorella* lays a clutch of thirty to forty eggs once or, in particularly good years, twice during each summer” (Hoffman, undated). For helminthoglyptidae embryonic brooding may or may not be present and they can be oviparous or viviparous. The eggs are single, not embedded in a jelloid/mucoid mass. The egg capsule could be partially calcified, with calcite crystals embedded in jelly layers but not forming a distinct shell or it could be calcified forming a distinct shell. The larval development has no trochophore or veliger stages, there is direct development in the egg. The larval operculum is absent. The genital orifices in the male and female are fused or nearly so in cephalic region, near right ocular tentacle. The extrapallial sperm duct is a closed duct, free in the body cavity. The lumen of the penis is lacking of spines. (Barker 2001).

FOOD HABITS: Hoffman states that *Sonorella* in the Pinaleno Mountains feed primarily on fungus and decaying plant matter which is supplemented with young green shoots when available. For helminthoglyptidae, the openings of the digestive gland lobes are more or less adjacent, openings are intestinal. The stomach is greatly simplified, with very poorly developed musculature. The diagonal intestinal folds are absent. The intestinal valve is absent. (Barker 2001).

HABITAT: Rockslides within the Pinaleno Mountains, Graham County, Arizona.

ELEVATION: 6,520 - 9,100 ft. (1987- 2776 m).

PLANT COMMUNITY: Hoffman (undated) states that “the plants associated with the land snails in the Pinaleno Mountains vary with elevation.” He lists that there are various plant species associated with these snails for “higher” and “lower” elevations, but only defines those for lower elevations above Ladybug Saddle. These include *Quercus gambelii* (gambel oak), *Pinus ponderosa* (Ponderosa pine), and *Robina Neomexicana* (New Mexicana locust).

POPULATION TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: SC (USDI, FWS, 1996)
[C2 USDI, FWS 1994]
[C2 USDI, FWS 1991]

STATE STATUS: 1B (AGFD SWAP 2012)

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999, 2013)

MANAGEMENT FACTORS: Factors that may affect this species are restricted and declining distribution with associated potential for extinction due to chance events; potentially intense fires resulting from increased fuel loads.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Research is needed on effects of controlled burns; modification of fire suppression policy; periodic monitoring on snail populations and their habitats; research on ecology and systematics.

LAND MANAGEMENT/OWNERSHIP: USFS - Coronado National Forest.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

- Arizona Game and Fish Department. 2012. Arizona's State Wildlife Action Plan 2012-2022. Phoenix, AZ.
- Barker, G.M. 2001. The Biology of Terrestrial Molluscs. CABI Publishing UK. Pp: 139-144.
- Fairbanks, H.L. and R.L. Reeder. 1980. Two new species of *Sonorella* (Gastropoda: Pulmonata: Helminthoglyptidae) from the Pinaleno Mountains, Arizona. Proceedings of the Biological Society of Washington. 93(2) Pp. 395-404.
- Hoffman, J.E. Undated. Status survey of seven land snails in the Mineral Hills and the Pinaleno Mountains, Arizona. Prepared for USFWS.
- NatureServe Explorer: An online encyclopedia of life [web application]. 2003. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: November 19, 2003).
- Sorenson, J. 2003. Personal Communication to Joan Scott, AGFD.
- USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.
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- USDI, Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule. Federal Register 56(225): 58822.
- USDI, Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule. Federal Register 59(219): 59007.
- USDI, Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants: Review of Plants and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species: Proposed Rule. Federal Register 61(40): 7597.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Hoffman, J.E. - Pima Community College (West), Tucson, Arizona.

ADDITIONAL INFORMATION:

Revised:	1992-03-13 (DBI)
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